Treasury Borrowing Advisory Committee Presentation

To what extent has fixed income dynamics in overseas markets affected demand for US Treasuries? Please also assess the challenges faced by the major global sovereign borrowers over the medium term. How are these challenges similar to or different from the case of the United States?

Agenda

I: Economic outlook of major economies outside the US, and recent policy action
- Record low yields outside US, and a collapse in term premia in core bond markets

II: Impact on the US Treasury market
- Sharp change in the demand base, from official to private
- Treasury demand has stayed strong; some challenges on the liquidity front

III: Impact on other sovereign debt issuers
- Opportunity to term out issuance

IV: Medium-term challenges
- Interest costs will become a larger part of the conversation
- Limited flexibility to handle next economic downturn
- Fed unwind of QE could pose a challenge
- Change in demand base to more price-sensitive buyers

I: Recent fiscal/policy actions in other major economies

Experience with negative interest rates

Central Bank	Action	Reason
Denmark	July 2012 to April 2014: Certificates of deposit rate lowered to -0.2%;raised to -0.1% in January 2013, and back to positive in April 2014; September 2014 onward: Cut the certificates of deposit rate to -0.75% in a series of steps. Current account cap raised from DKK37 billion to DKK 173billion.	To discourage capital flows placing upward pressure on the krone. To manage upward pressure on the krone. Current account cap raised to reduce costs to the banking sector of the negative deposit rate
Euro area	June 2014 onward: Lowered the Deposit Facility Rate (DFR) to -0.1% in June 2014, -0.2% in September 2014, -0.3% in December 2015 and -0.4% in March 2016.	Subdued growth and weak inflation outlook (successively revised downward)
Sweden	July 2009 to September 2010: Cut deposit rate to -0.25%. July 2014 onward: Deposit rate lowered into negative territory (-0.5%). Beginning in February 2015, the repo rate became negative (-0.1%) and was subsequently lowered to -0.35%, bringing the deposit rate to -1.10%.	Deep recession Persistently below target inflation.
Switzerland	1972: Penalty charge of 2% per quarter applied to the increase in CHF deposits from non-residents. Increased to 3% in November 1973 and 105 in February 1978. December 2014 onward: Target range for the 3-month Libor lowered to -1.25% to -0.5% in two steps. Rate on sight deposits at the SNB lowered to -0.75%.	To discourage capital flows , particularly from oil-exporting countries. To manage upward pressure on the franc, weak growth and concerns over deflation.
Japan	January 2016 onward: The BoJ adopted a three-tier system in which the outstanding balance of each financial institution's current account at the Bank will be divided into three tiers, to each of which a positive interest rate, a zero interest rate or a negative interest rate are applied, respectively	To achieve the price stability target of 2 percent at the earliest possible time

http://www.bankofcanada.ca/wp-content/uploads/2015/11/dp2015-13.pdf

Source: Bank of Canada, Barclays Research

Growth and inflation forecasts have been revised lower

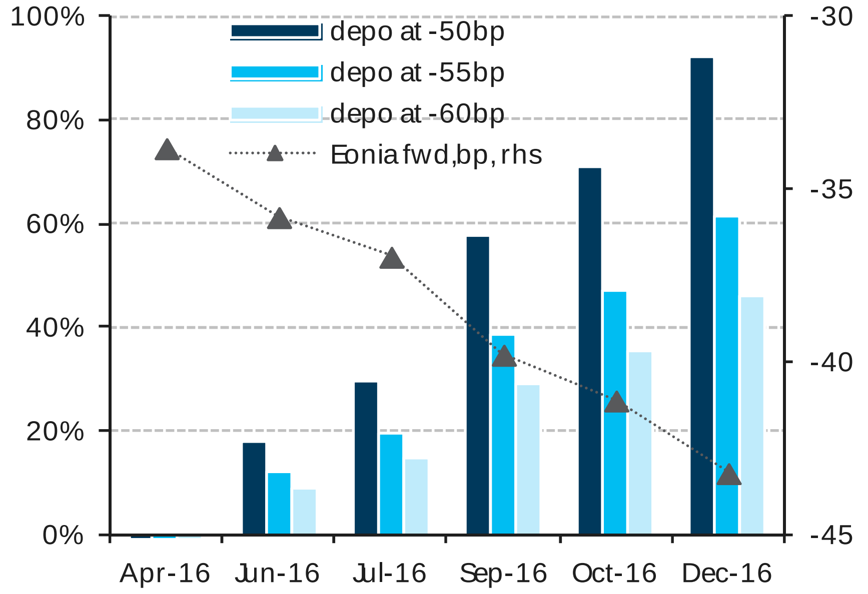
Further downward revisions to our global growth and inflation outlook since November													
	Real GDP (% change)										Inflation (% annual change)		
	Barclays								vs. Nov. GO	vs. Consen	Barclays		
	Q3 15	Q4 15	Q1 16	Q2 16	Q3 16	2015	2016	2017	2016	2016	2015	2016	2017
Global	3.2	2.7	2.5	3.4	3.7	3.2	3.1	3.7	-0.3	-0.1	2.0	2.7	3.0
United States	2.0	1.4	0.5	2.0	2.5	2.4	1.7	2.4	-0.8	-0.3	0.1	1.5	2.6
Japan	1.4	-1.1	-0.1	1.0	1.6	0.5	0.4	1.0	-0.7	-0.2	0.5	-0.2	1.6
Uniited Kindom	1.8	2.4	1.0	0.0	2.5	2.3	1.5	1.9	-0.4	-0.5	0.0	0.7	1.6
Euro area	1.2	1.3	1.4	1.5	1.7	1.5	1.4	1.7	-0.2	-0.1	0.0	0.1	1.0
Advanced	1.7	1.1	0.8	1.6	2.1	1.9	1.5	2.0	-0.5	-0.3	0.2	0.8	1.9
Emerging	4.4	3.9	3.7	4.8	4.9	4.2	4.3	4.9	-0.1	0.1	4.9	5.4	4.6
Brazil	-6.7	-5.8	-2.4	-1.2	0.4	-3.8	-3.1	0.6	-1.4	0.0	9.0	8.7	6.4
Mexico	3.3	2.2	2.8	0.8	1.6	2.5	2.2	2.7	-0.3	-0.5	2.7	2.7	2.9
China	6.9	6.5	6.3	6.5	5.9	6.9	6.4	5.8	0.4	0.0	1.4	2.2	1.8
India	8.1	4.4	6.6	10.4	8.9	7.3	7.6	8.0	-0.4	0.0	4.9	4.8	5.1
South Korea	5.0	2.7	2.0	2.0	2.7	2.6	2.5	2.4	-0.5	-0.2	0.7	1.3	1.8
Indonesia	4.2	7.3	4.5	5.3	4.9	4.8	5.4	6.0	0.0	0.4	6.4	4.2	4.7
Poland	2.7	4.2	3.6	2.5	3.7	3.4	3.6	4.1	0.2	0.0	-0.8	-0.6	0.4
Russia	-2.3	-3.0	-0.2	0.0	1.4	-3.7	-1.0	1.5	-1.0	0.3	15.5	8.4	6.8
Turkey	3.1	6.8	0.0	3.4	3.5	4.0	3.3	3.6	0.4	0.0	7.7	8.2	8.0
South Africa	0.7	0.6	0.6	0.6	0.9	1.3	0.6	1.4	-1.2	-0.3	4.6	6.8	6.1

Source: Barclays Research

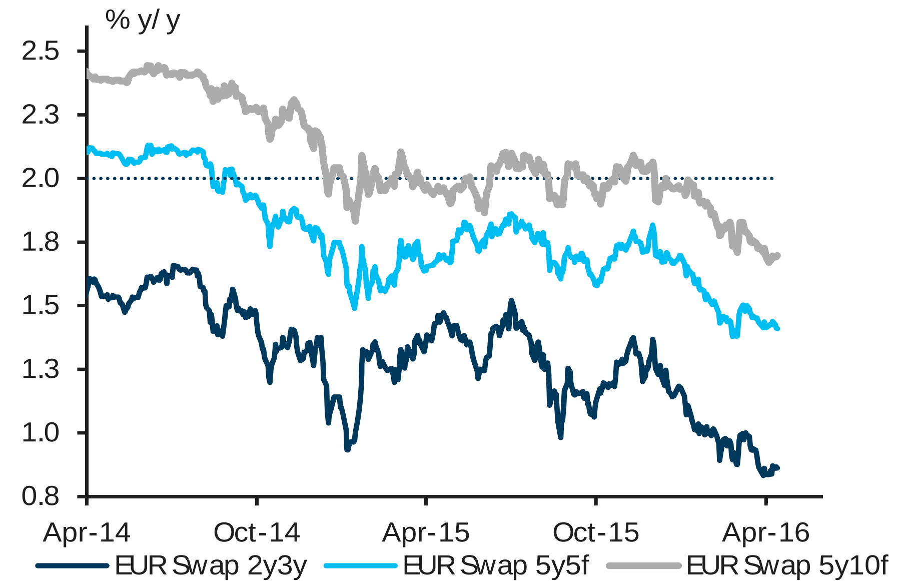
ECB: more QE/CE and fewer rate cuts

- With inflation well below target, inflation expectations (nearly) at historical lows, credit dynamics subdued, and recent euro strength, the ECB surprised with a broad package at the March meeting:
  - ➢ **More QE**: Additional EUR20bn purchases, bringing monthly APP purchases to EUR80bn
  - ➢ **More CE**: Added corporate debt to APP + new 4year TLTRO II programme (as low as -40bp if banks meet some lending thresholds; if not, there is no mandatory early repayment)
  - ➢ **A moderate rate cut**: Cut the depo rate to -0.40%, the refi rate to 0%, and the MLF to +0.25%.
  - ➢ **ECB signalled limited-scope for more depo cuts** (on financial stability concerns).
  - ➢ **Reinforced forward guidance**: low rates to remain well below the end of the APP (March 2017).

ECB-dated EONIA forwards signal that another 10bp depo rate cut could come before year end



Expectations still signal weak medium-term inflation dynamics



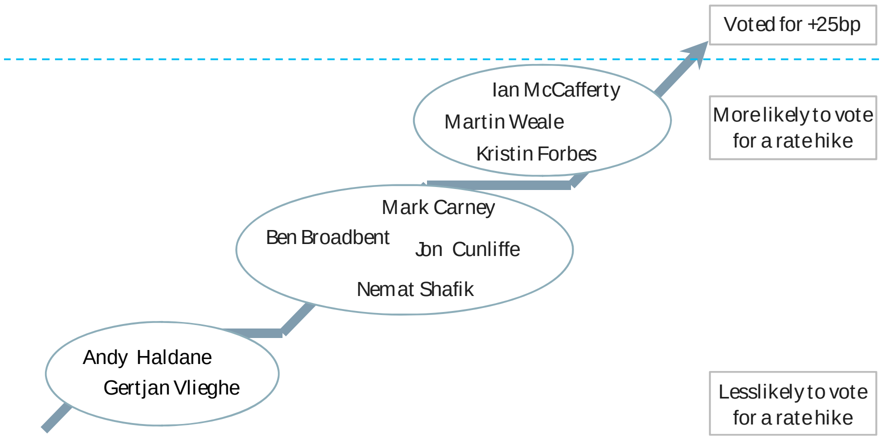
Source: Bloomberg, Barclays Research

BoE Monetary policy: Further down the river she sails

A hike in the Bank Rate appears off the table in the short-term

- **In March 2016, we pushed back our call for a hate hike from Q4 16 to Q2 17** due to our view that the domestic economy is slowing, only magnified by EU referendum uncertainties, the ongoing absence of significant domestic inflationary pressures and an uncertain global economy and jittery financial markets.
- **Our call is predicated on three key assumptions:**
  1. the UK remains a member of the EU following the 23 June referendum;
  2. post-referendum, we see a pick-up in investment and private consumption; and
  3. nominal wage pressures build up over 2016, reaching approximately 3% 3m/y by the turn of the year.
- We continue to expect a hike every six months, allowing the Committee to gather sufficient information and reassess its stance between hikes, but acknowledge risks of a wider period between hikes. Given the very cautious narrative from central banks regarding uncertain global economic and financial conditions, we acknowledge the risk that the Committee may leave more than six months between hikes.

Dove-Hawk meter (as at April 2016 meeting)



Source: Barclays Research

Japan: Monetary and fiscal policy initiatives since 2015

Monetary policy measures since 2015	
Dec-15	BoJ introduced supplementary measures to strengthen the open-ended character of QQE. The main measures were as follows: a)Accept foreign currency-denominated loans on deeds as eligible collateral b)Extend average remaining maturity of the Bank's JGB purchases from about 7-10 years to about 7-12 years c)Increase the maximum amount of each issue of J-REIT to be purchased from the current 5 percent to 10 percent of the total amount of that J-REIT issued
Jan-16	BoJ introduced "**QQE with a negative interest rate**" in an unexpected manner. In doing so,it introduced a three-tier system under which the outstanding balance of each financial institution's current account at the BoJ is divided into the following three tiers with different rates applying: a) Basic balance (applicable interest rate: 0.1%): the average balance during the reserve maintenance period from January to December 2015 less the current required reserves b) Macro add-on balance (applicable interest rate: zero): The total of required reserves, the amount outstanding of the BoJ's provision of credit through the Loan Support Program and the Funds-Supplying Operation to Support Financial Institutions in Disaster Areas, and the macro add-on whose balance is increased every three months by the BoJ board c) Policy-rate balance (applicable interest rate: -0.1%): The outstanding balance of each financial institution's current account at the BoJ in excess of the "basic balance" and "macro add-on balance."

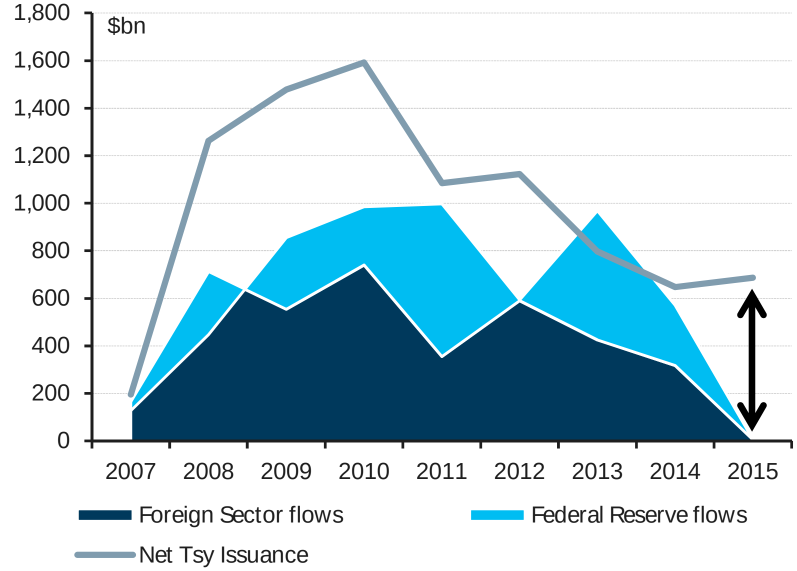
Fiscal measures since 2015	
Feb-15	The Abe government formed a supplementary budget of JPY3.1trn (0.6% of GDP) mainly to support aged consumers and local economies
Jan-16	The Abe government formed a supplementary budget of JPY3.3trn (0.7% of GDP) mainly to support local areas and earthquake-affected regions
Currently	Given the Kumamoto earthquake that occurred in April 2016, the Abe government is considering forming another supplementary budget probably during the current Diet session that ends on 1 June. There is a growing possibility that PM Abe will postpone the VAT hike planned for April 2017, although he may not rush to make that decision, which could be interpreted as a failure of his policy program (Abenomics) to build an economy resilient to such a hike

Source: Barclays Research

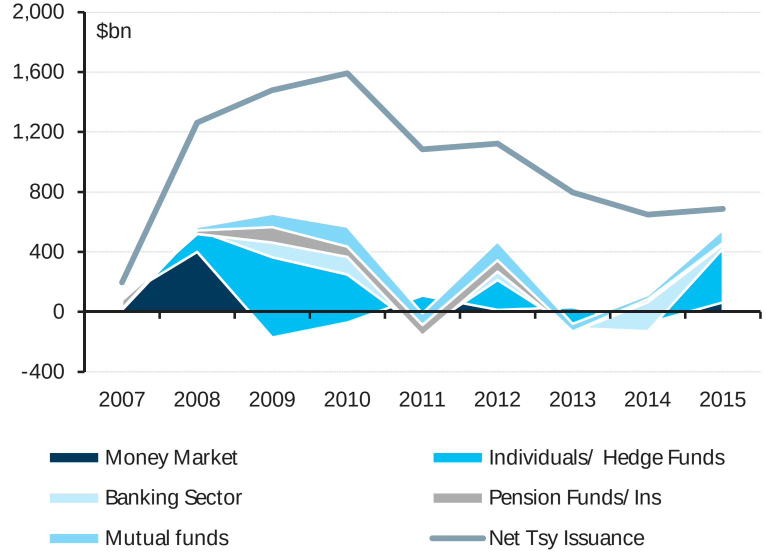
II: Impact on the US Treasury market

Shifting demand base for Treasuries: from official to private

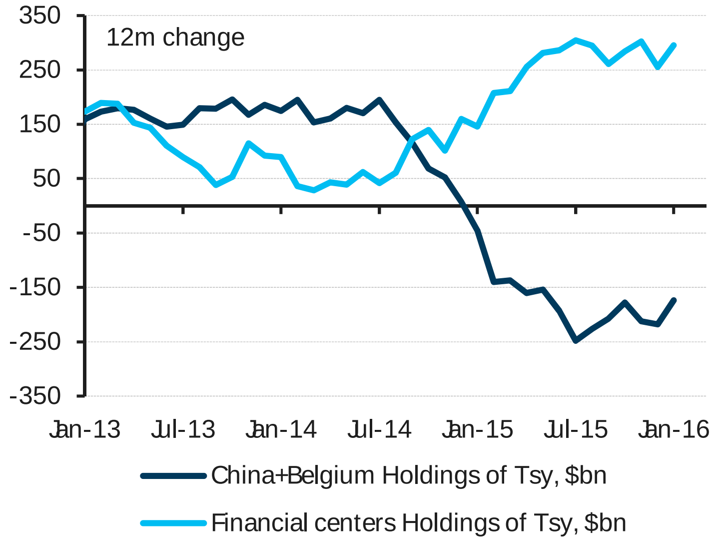
Foreign investors and the Fed did not absorb issuance in 2015



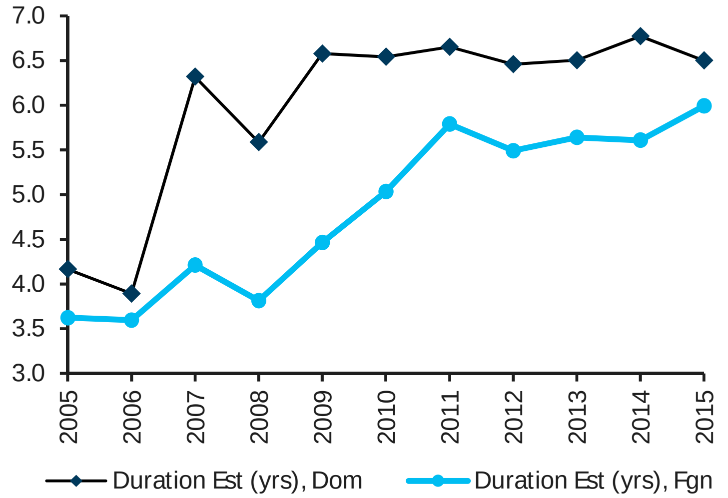
Private domestic investors have stepped up



Shift from official foreign investors to private foreign



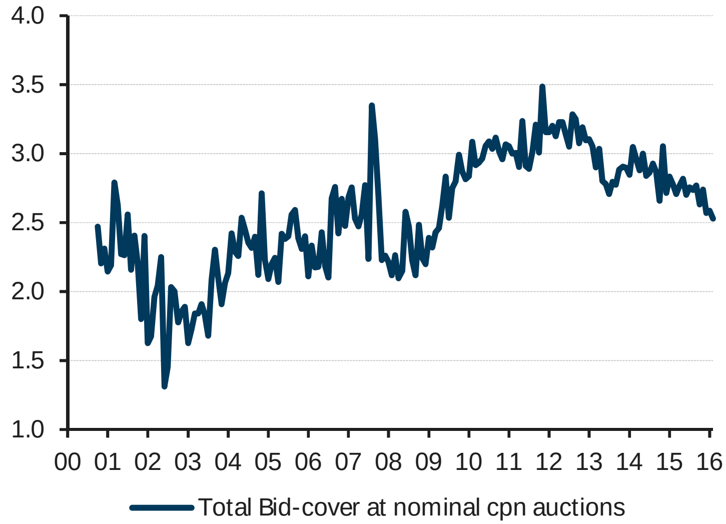
Foreign investors have termed out at auctions



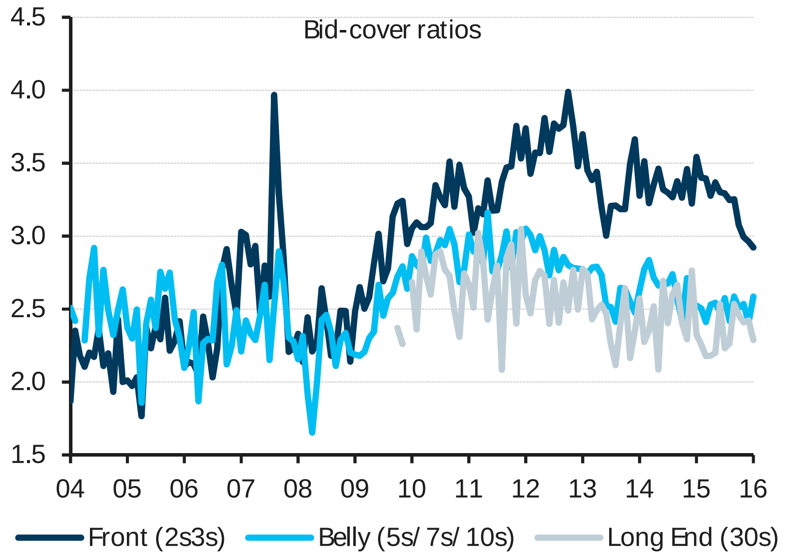
Source: US Treasury, Federal Reserve, Barclays Research

Domestic investor participation has increased at auctions

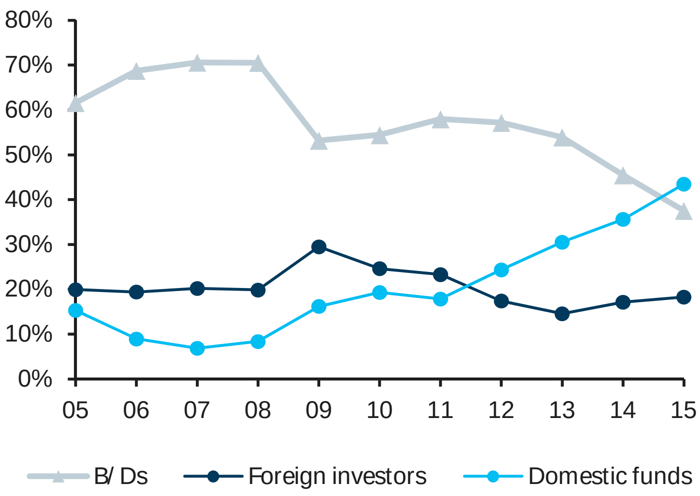
Bid-cover ratio remain higher than pre-crisis…



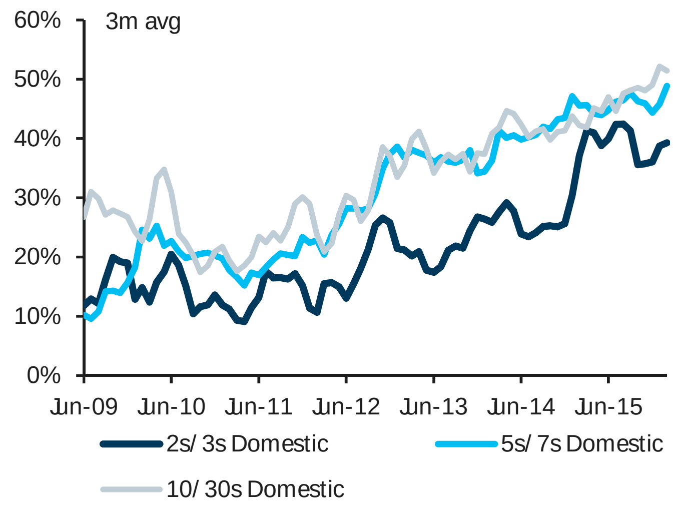
…especially at the front end



Domestic fund participation has increased…



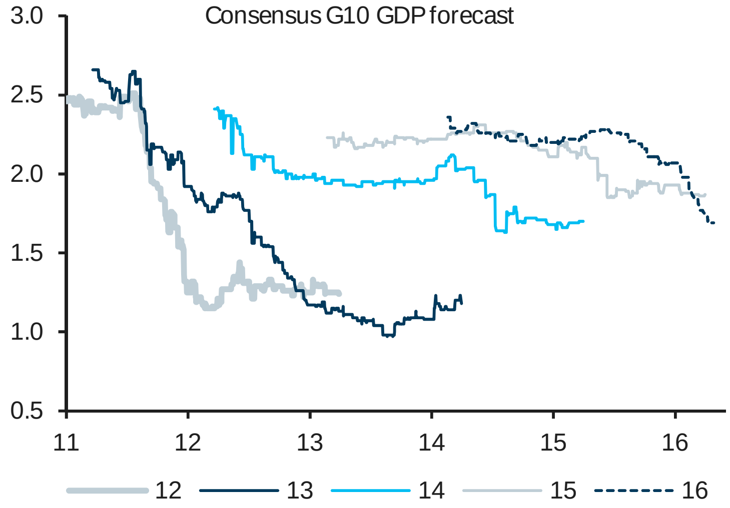
…across all tenors, more at the front end recently



Source: US Treasury, Barclays Research

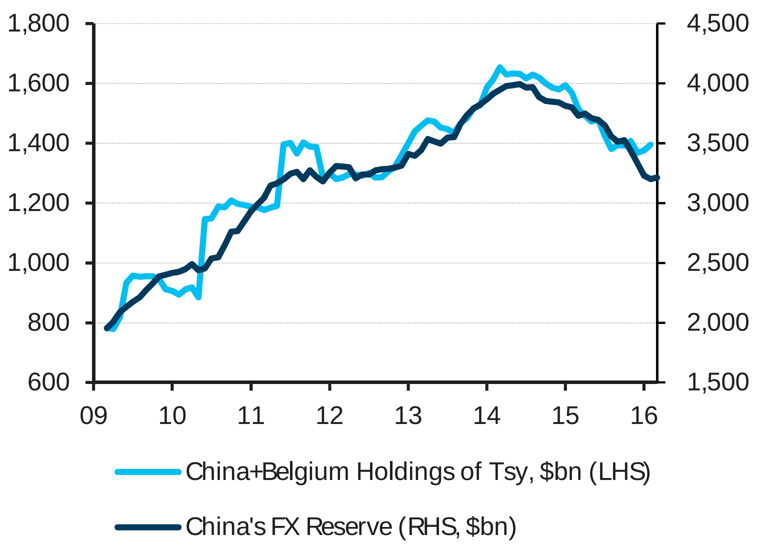
Reasons for the shift in demand base

G10 GDP has disappointed

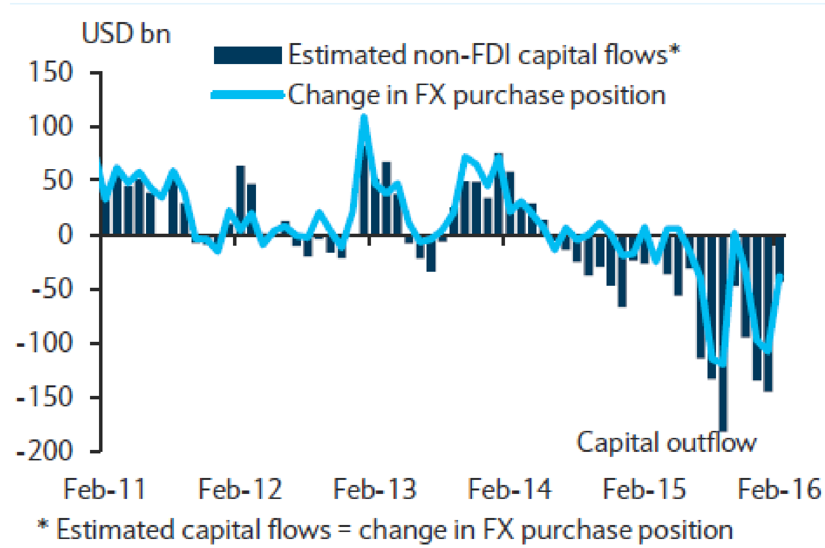


Banks have been strong buyers until recently (likely for regulatory purposes)

FX reserves and foreign official holdings of UST – in sync



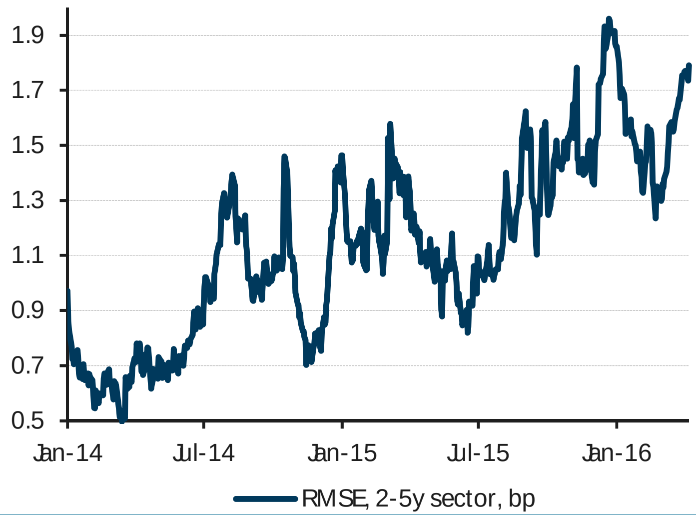
Estimated non-FDI capital outflows in China



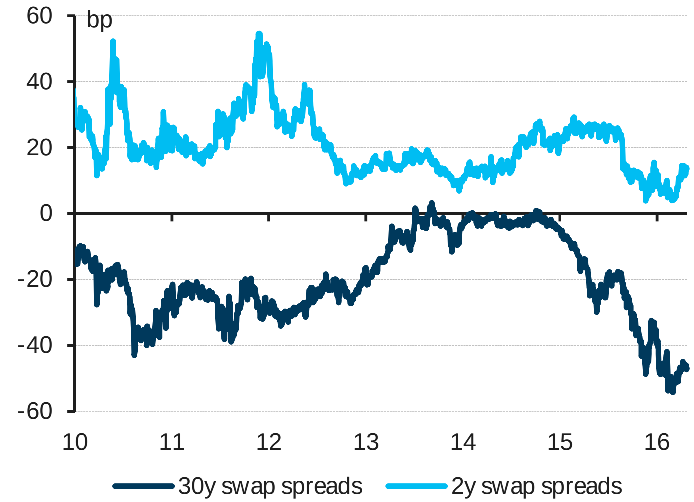
Source: Haver Analytics, Bloomberg, Federal Reserve, Barclays Research

Dislocations have increased amid decline in official purchases

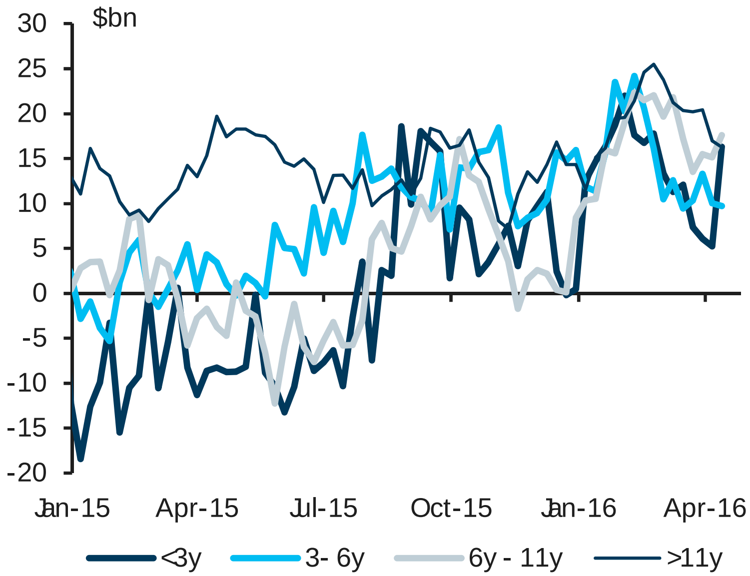
Our measure of front end dislocations has risen



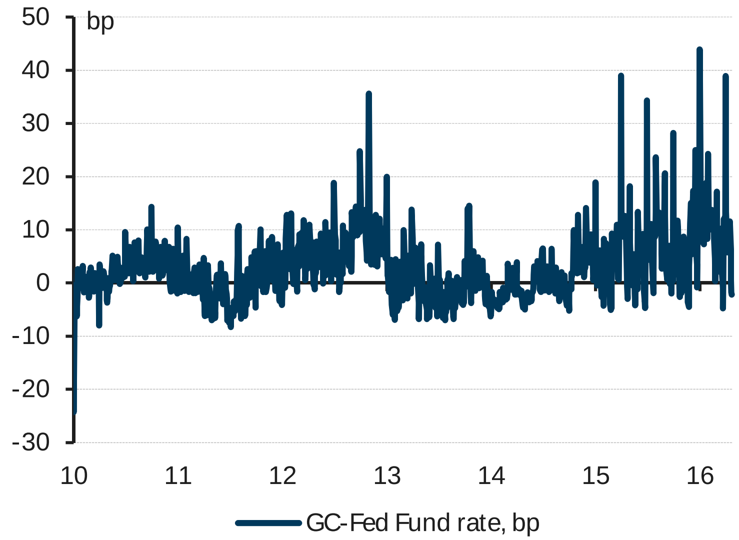
Swap spreads have tightened sharply



Dealer holdings of Treasuries has picked up



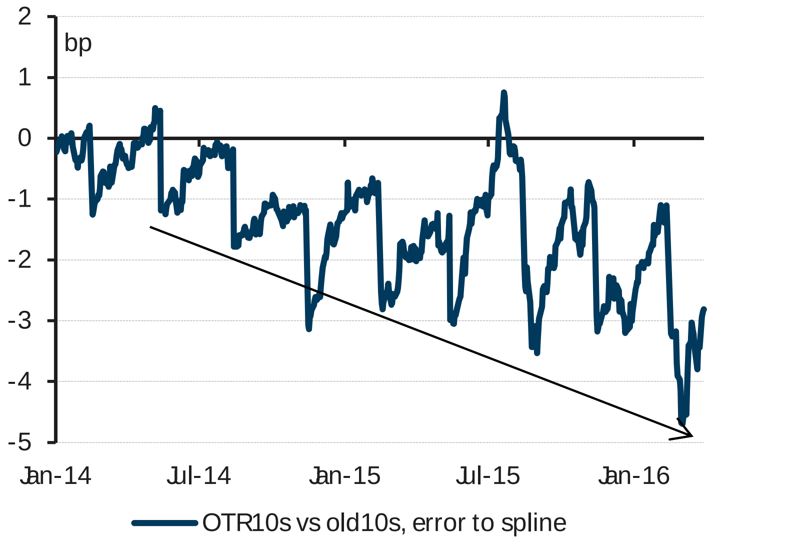
Higher secured rates relative to unsecured (repo vs FF)



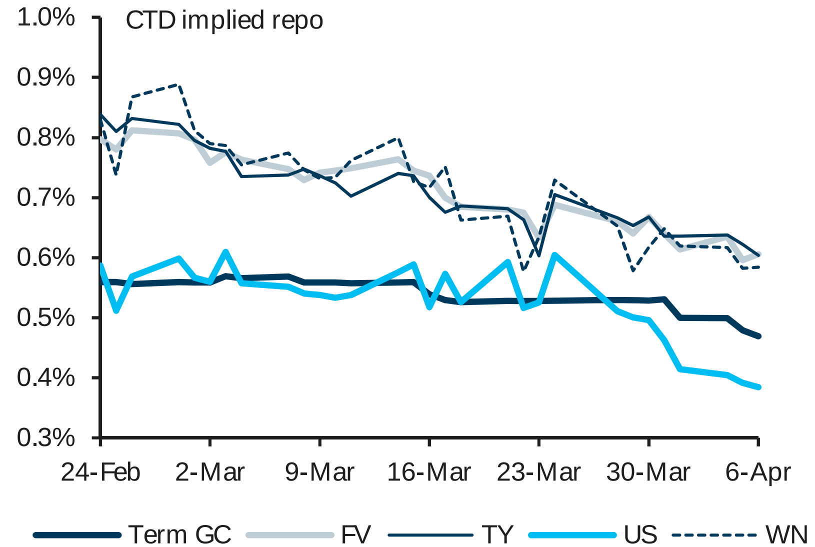
Source: Bloomberg, Barclays Research

Metrics of liquidity in the Treasury market

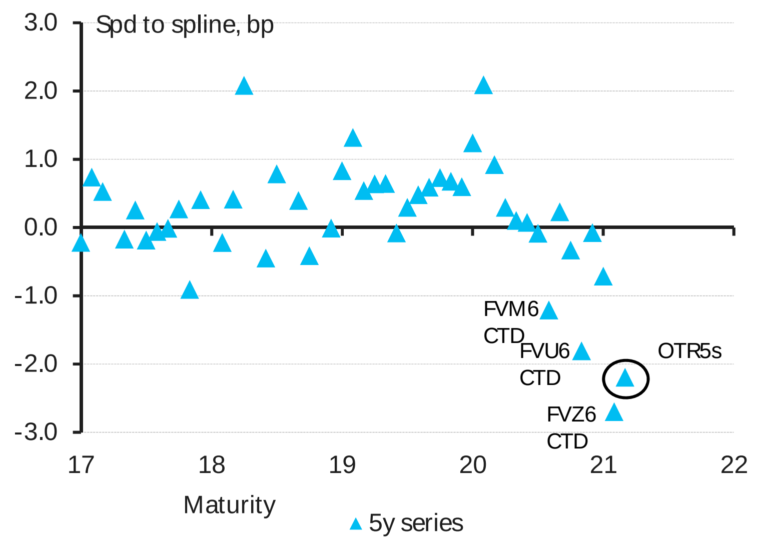
OTR10s vs old10s



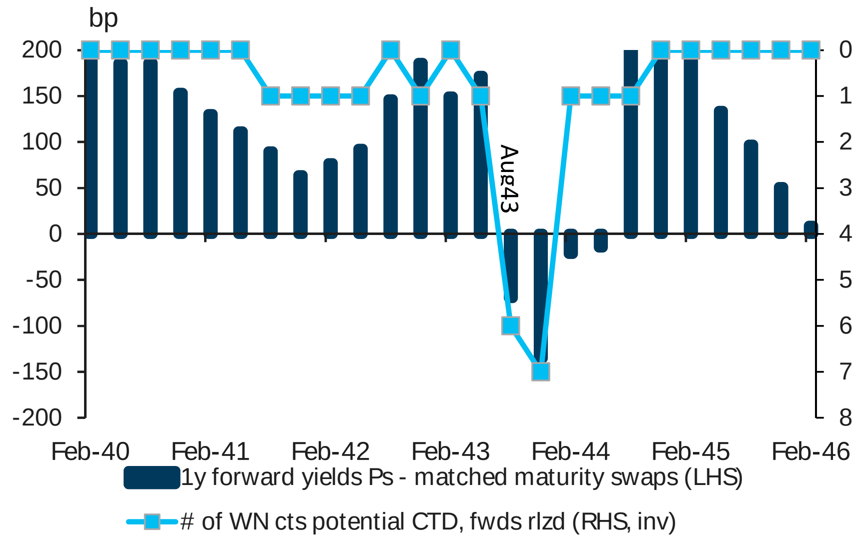
Treasury futures have traded very rich



Securities likely to be the CTD trade rich, in the belly…



…and the long end

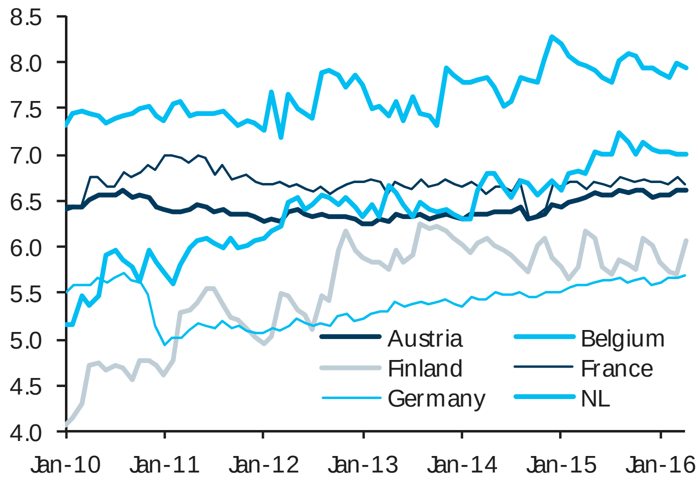


Source: Barclays Research

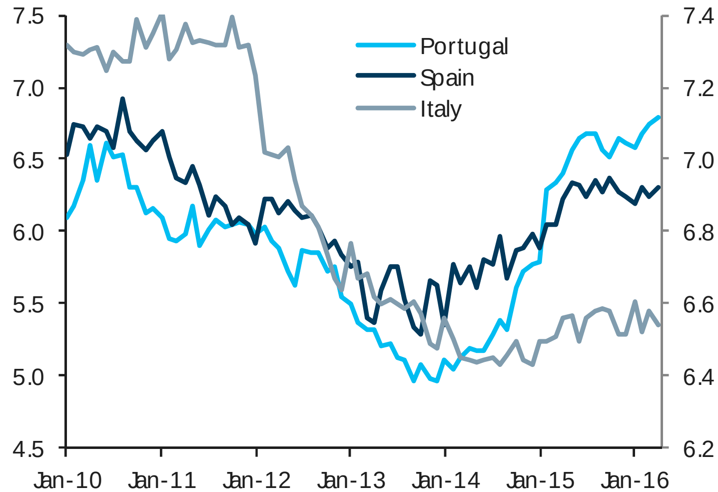
III: Impact on other sovereign debt issuers

Average Life extended at record low interest rates in EGBs

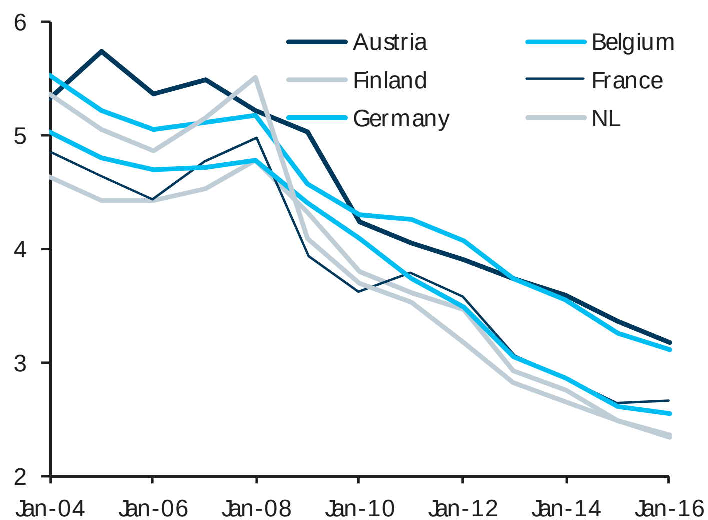
EGB Core debt average residual maturity – trending up



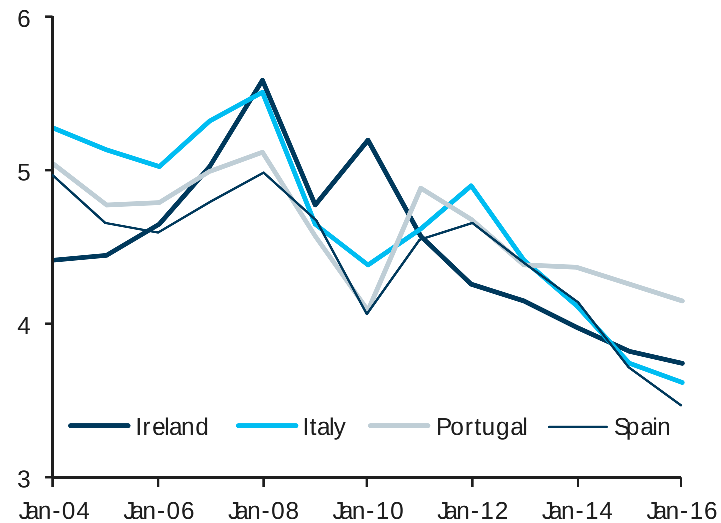
EGB Periphery debt average residual maturity – rebounding notably



EGB Core Interest Cost as % of Gross Debt



EGB Periphery Interest Cost as % of Gross Debt



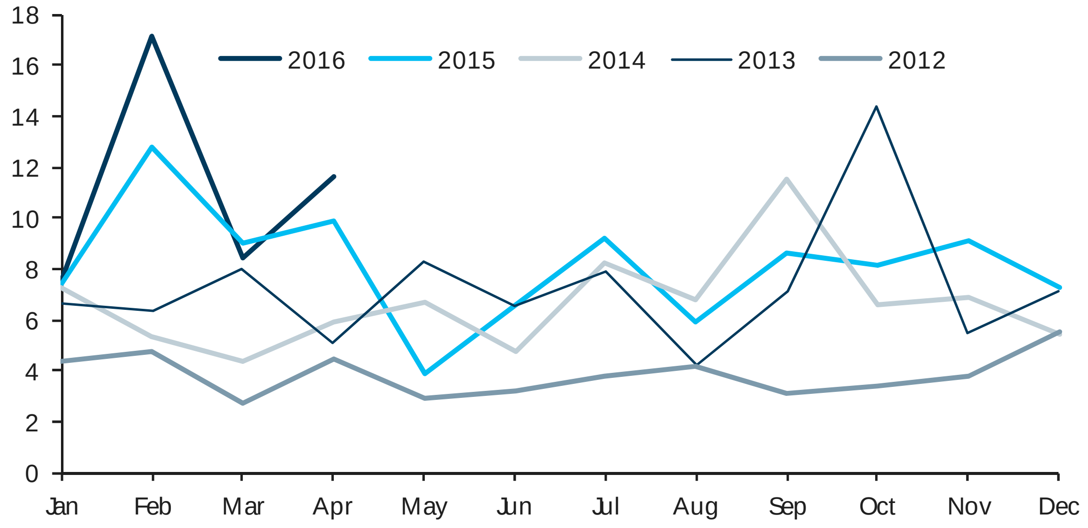
Source: Barclays Research, Haver Analytics, Respective Treasuries

ECB QE seeing issuance being skewed to longer maturities

Extension of maturities by issuers, especially in the more opportunistic periphery

	Difference 2015 vs 2014				2015				2014			
	2-3	5	10	>10	2-3	5	10	>10	2-3	5	10	>10
Germany	3%	-4%	0%	1%	34%	26%	33%	7%	31%	30%	33%	6%
France	-1%	-3%	10%	-5%	20%	21%	40%	18%	21%	25%	31%	23%
Italy	-5%	-6%	4%	7%	26%	25%	33%	16%	31%	31%	29%	9%
Spain	5%	-11%	-3%	9%	22%	22%	36%	20%	17%	33%	39%	11%
Belgium	7%	-5%	-5%	2%	7%	7%	49%	38%	0%	11%	53%	36%
Holland	2%	-2%	-1%	0%	34%	22%	32%	13%	31%	24%	33%	12%
Portugal	0%	-21%	21%	0%	0%	5%	76%	18%	0%	27%	55%	18%
Finland	12%	-35%	-6%	29%	12%	9%	37%	42%	0%	44%	43%	13%
Austria	0%	-15%	17%	-3%	13%	10%	68%	9%	13%	25%	50%	11%
Ireland	0%	36%	-69%	32%	0%	36%	0%	64%	0%	0%	69%	31%
Eurozone Aggregates	0%	-6%	3%	4%	24%	22%	37%	17%	24%	28%	34%	14%

Weighed Monthly Average Life Issuance in Spain – heavier longer end issuance so far in 2016



Source: Barclays Research

ECB QE: Displacement effect in the EGB market

Displacement effect in the EGB market under expanded QE

In €bn	Gross Issuance Rest of 2016	Net Issuance Rest of 2016	QE Displacement Effect
Germany	126.0	-3.5	-132.7
France	153.0	52.9	-52.9
Italy	186.0	7.3	-89.6
Spain	88.5	23.5	-46.0
Belgium	28.5	0.9	-18.6
Holland	27.0	-1.0	-32.5
Portugal	12.5	8.1	-5.6
Finland	7.0	-1.3	-11.2
Austria	11.1	-0.7	-16.1
Ireland	6.0	-2.1	-11.4
Total	645.6	81.7	-416.7

EGB market ownership of the ECB under expanded QE

% of eligible QE universe owned by ECB (only PSPP)		
	Feb-16 (excluding below depo rate yielding bonds)	Scenario B: Mar-17 €80bn QE with PSPP of €60bn
Germany	16.7%	33.0%
France	8.6%	20.1%
Netherlands	10.5%	24.2%
Belgium	6.0%	13.2%
Austria	8.2%	19.0%
Finland	12.8%	29.4%
Italy	10.4%	19.7%
Spain	12.5%	25.4%
Portugal	19.4%	34.5%
Ireland	12.8%	22.2%
Core Ave	10.8%	23.7%
Peripheral Ave	11.6%	22.3%
All EU Ave	11.1%	23.2%

Source: ECB, Bloomberg, Barclays Research

EGB issuers have adopted more flexibility in various forms

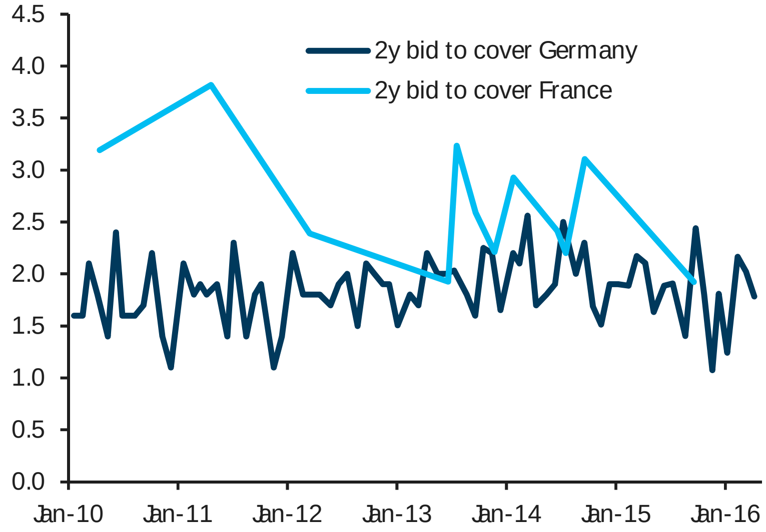
Changes in issuing procedures over the past few years

Austria	More emphasis on investor relations
Belgium	Increased focus on predictability and flexibility in order to respond to changing market environment, achieved through enhanced communication. Moved to monthly auctions from every other month frequency.
Finland	Diversification of funding sources, more coordination with PDs.
France	More issuance at the ultra long end thanks to QE helping push investors further out and lower yields. The Tresor made its issuance more flexible to meet off-the-run bond demand from ECB QE: the proportion of total issuance relying on off-the-run issues hit its highest point since 2011 at 33% in 2015 compared to 21.8% in 2014. Introduction of new long end 20y benchmark alongside 15, 30 and 50y.
Germany	Continued to commitment to high predictability in issuance patterns. In 2016, Finance Agency switched to more frequent and smaller taps of 30y bond and also in off-the-runs instead of large 1-2 tap approach in pure new benchmarks
Ireland	Syndications are used also for re-openings than just new issuance. Private placements are also used (eg. new 100y issued recently).
Italy	More commitment to regularity, transparency and predictability while taking advantage of QE to issue more in medium/ long-term maturities and reduce short-term ones. More off-the-run taps, new 7y and 20y line introduction, issuance of BTP Italia in recent years alongside other technical measures.
Netherlands	Dutch Treasury aims to extend average maturity of debt from 4.5yrs at 2014 to as high as 6.5yrs going forward. Its goal is to reduce the use of interest rate swaps and increase budgetary stability and reduces future risks through the extension of the maturity of the debt issuance.
Spain	Very regular detailed updates in its debt management presentation to enhance transparency. Alongside regular auctions and syndications, more flexibility seeked through alternative funding tools such as private placements and possibility of special auctions.
Portugal	Very regular detailed updates in its debt management presentation to enhance transparency. Bond market volatility still keeps heavy reliance to syndications of new benchmarks as well as reopenings.
United Kingdom	In a notable move at the March 16 budget, UK DMO allowed itself more flexibility to respond to market conditions to reflect changes in regulatory backdrop and market infrastructure. The DMO has now elected to increase the frequency of and reduce the average size of auctions alongside other technical measures.

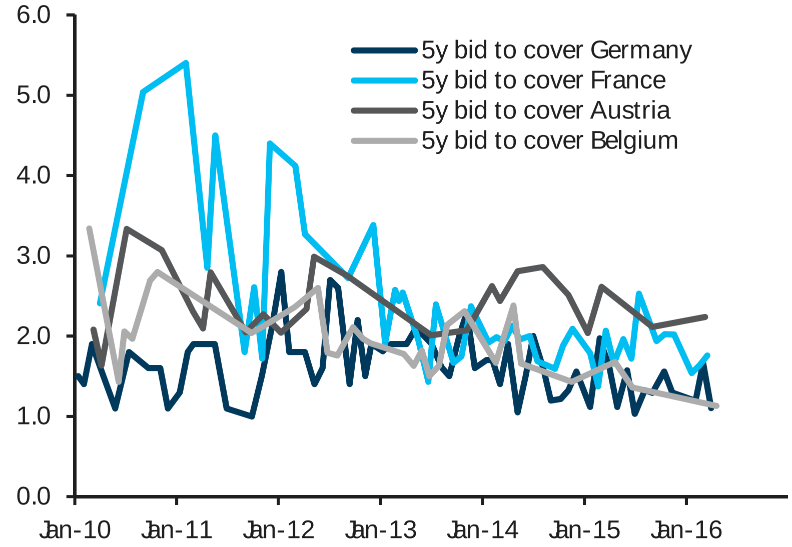
Source: National Debt Agencies, Barclays Research

EGB bid-cover ratios and tails have been stable

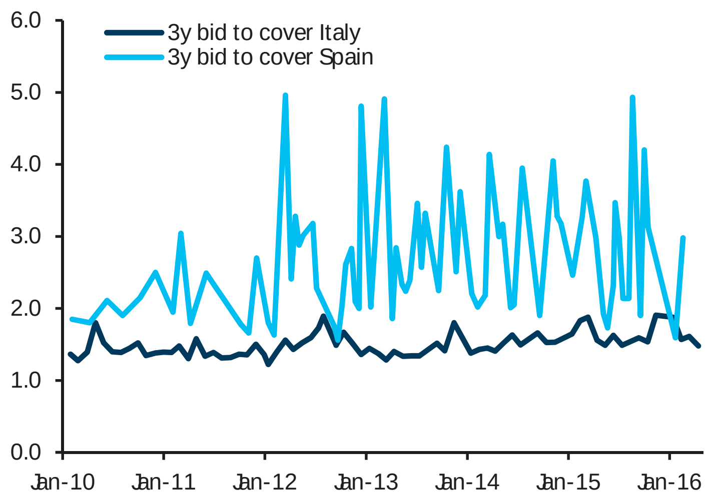
Bid to covers are broadly stable in short end…



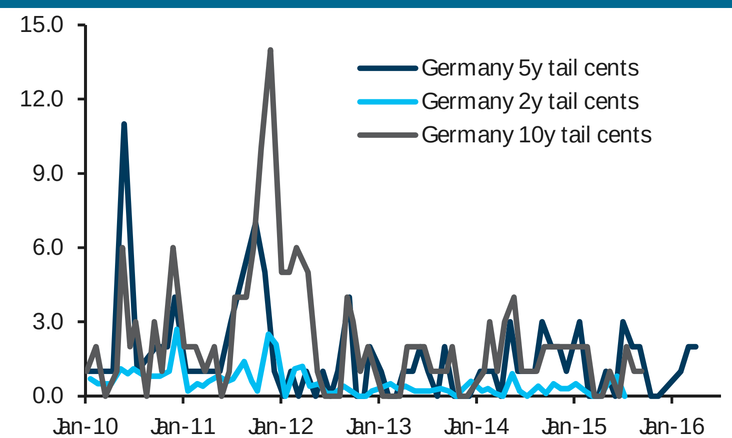
…and also in belly core



Periphery bid to covers have also not shown any clear trend in the past few years



Tails in German auctions have averaged between 0-3 cents since 2013

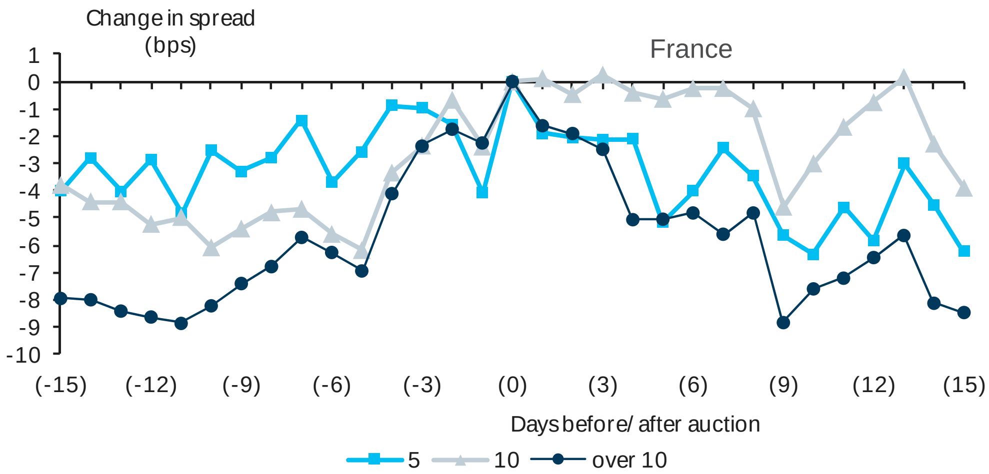


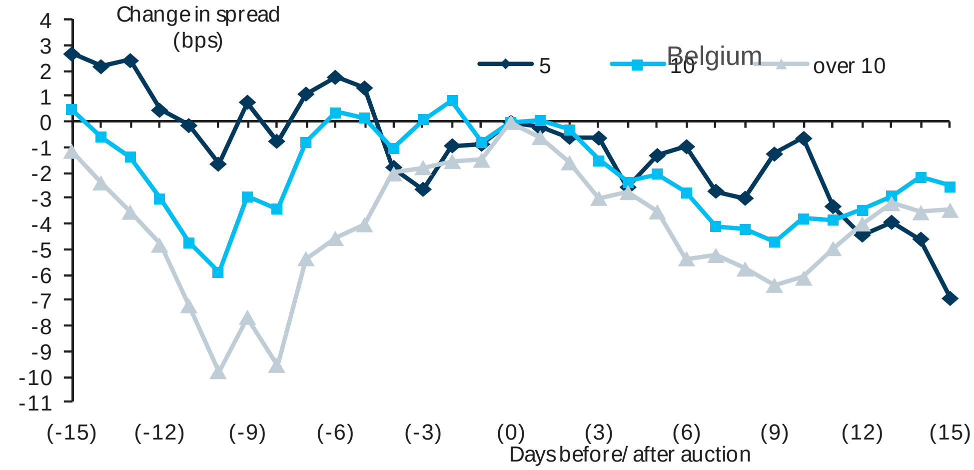
Tail: average price minus lowest accepted price in cents

Source: Bloomberg, Barclays Research

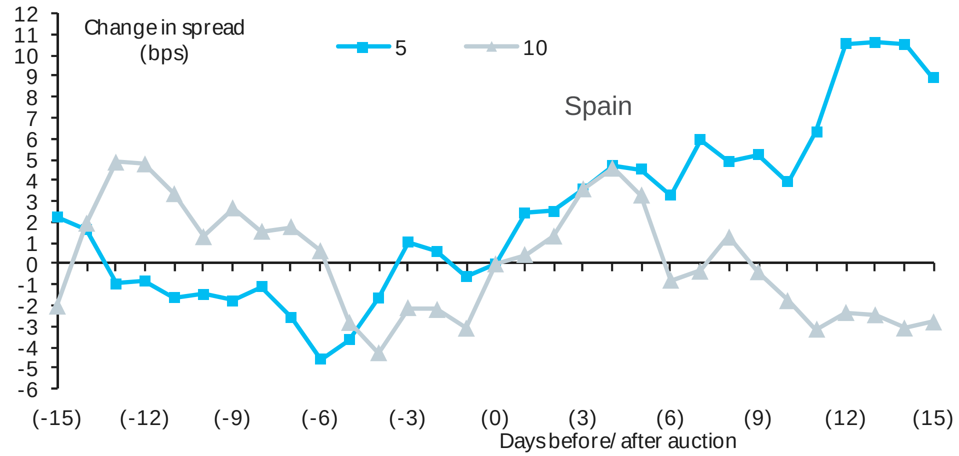
Auction concessions vs Bund in peripheral Europe

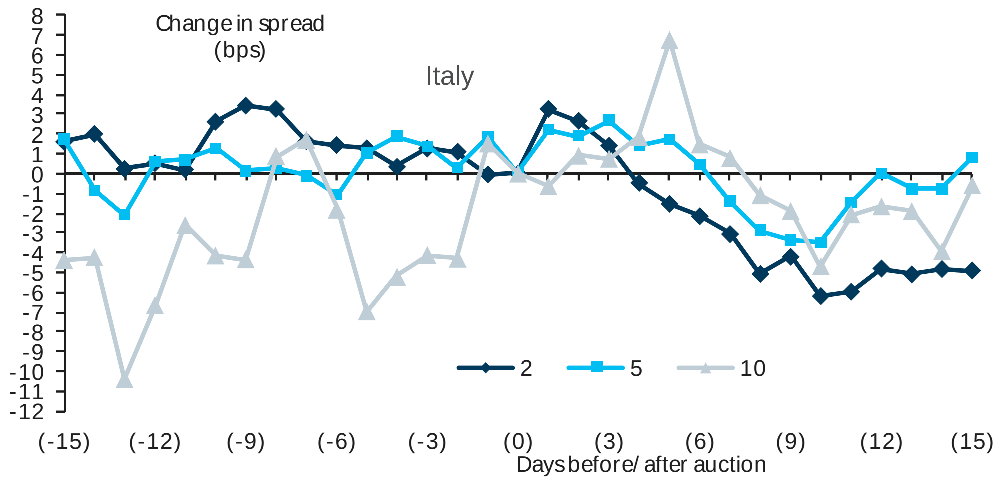
Core/semi-core EGB issuers experience modest auction concessions especially at the ultra long end





While peripheral bonds also experience auction concessions, they are much less than the eurozone crisis period

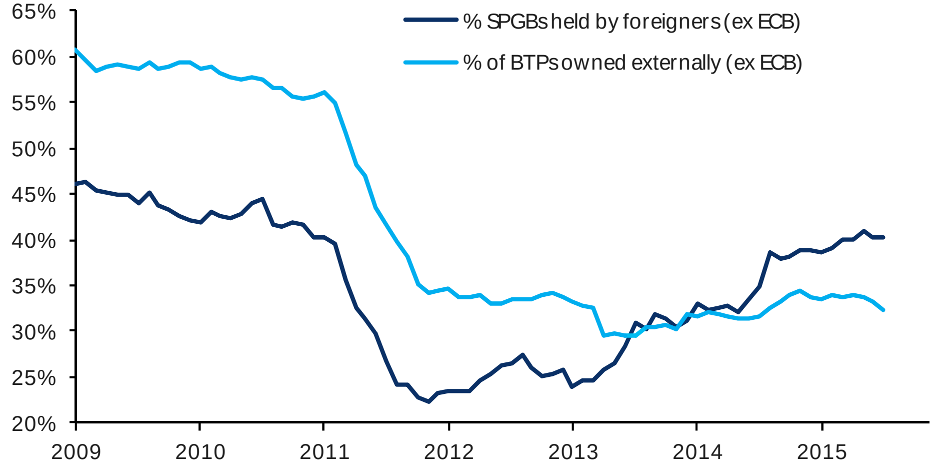


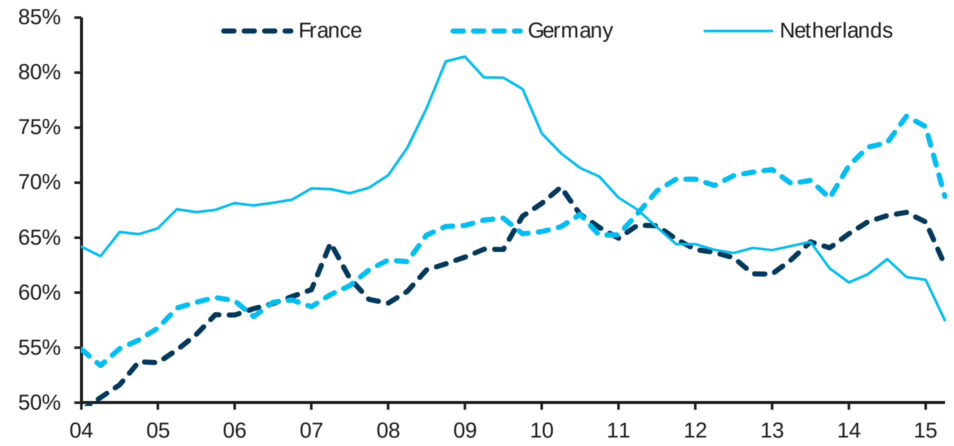


Source: Barclays Research, Note: auction concessions are calculated from the average of all auctions in 2015

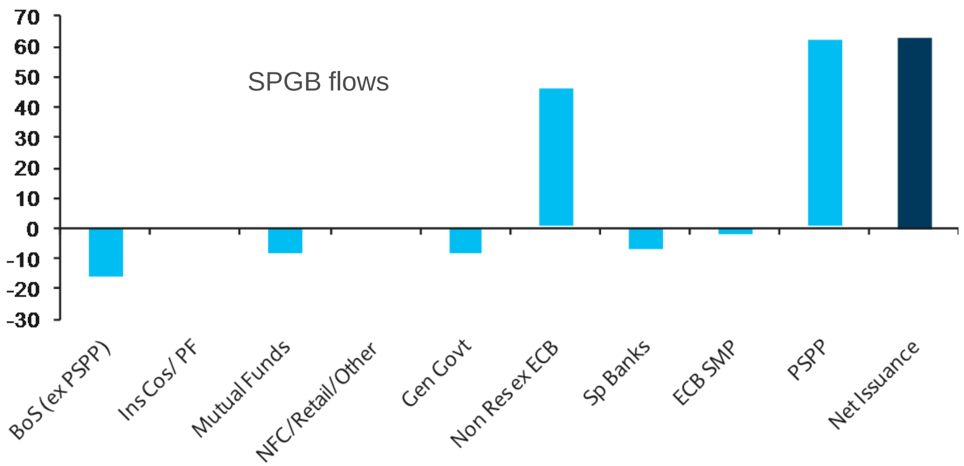
EGB ownership and ECB's QE support for net issuance

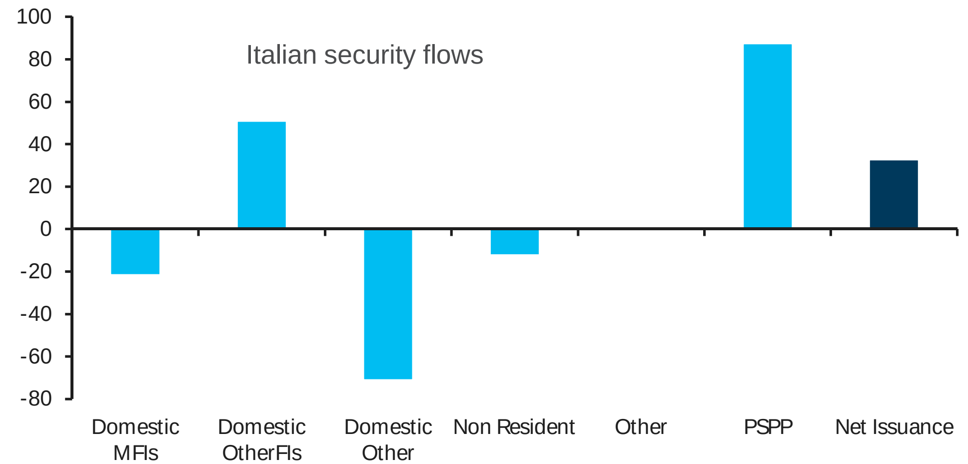
Non resident ownership has been stable in core EGBs but increasing in periphery after sharp falls during crisis





EGB QE has been strongly supportive of net issuance since QE started

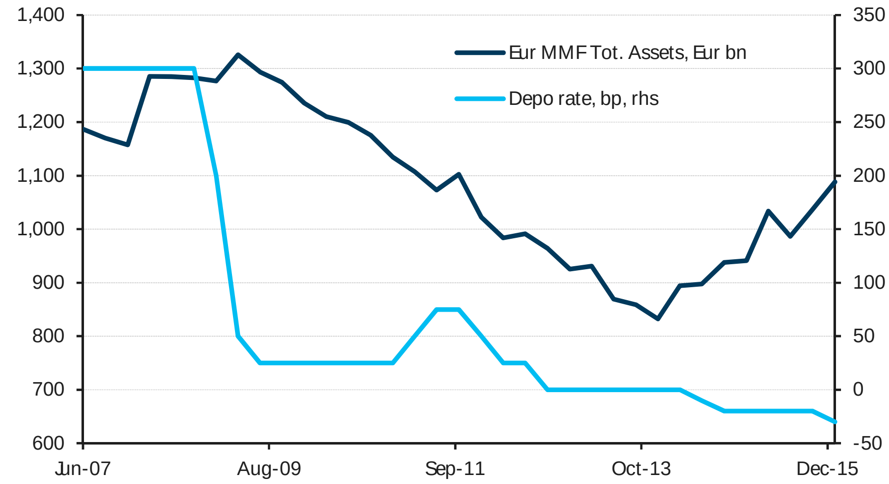




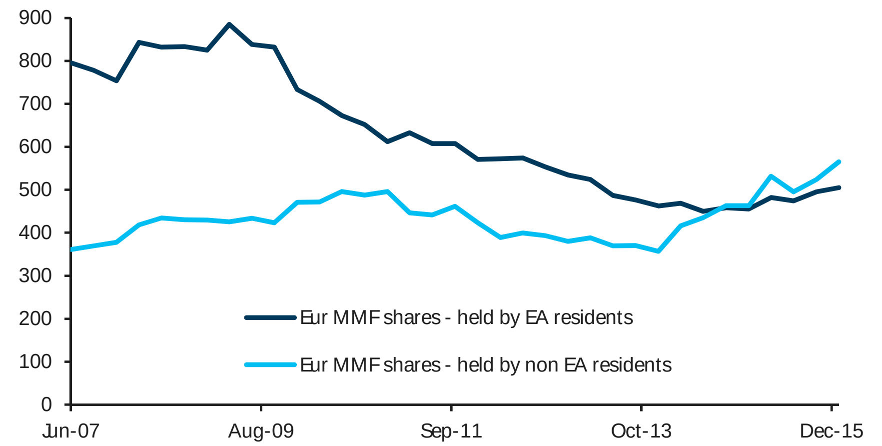
Source: Barclays Research, National Central Banks, National Treasuries, IMF

Despite negative rates, MMF total assets have increased

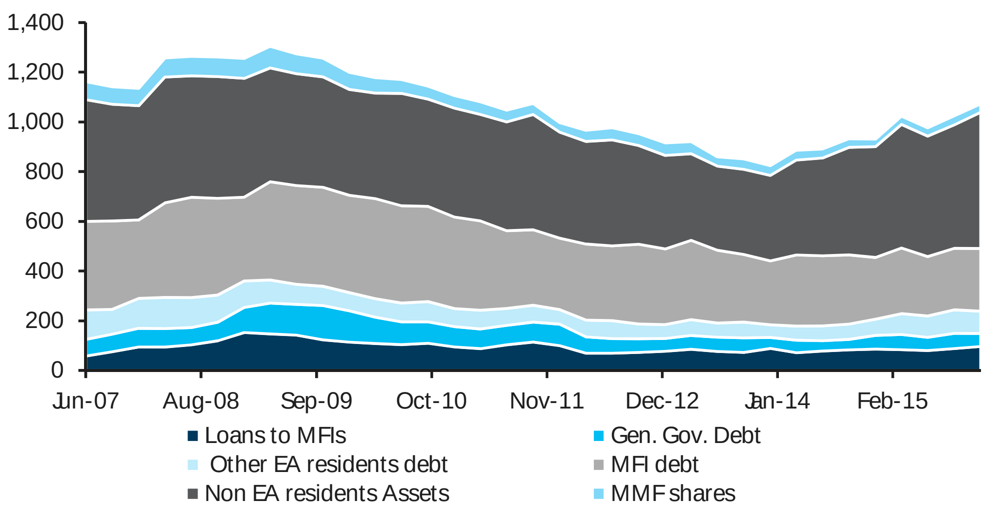
Euro MMF total assets and ECB's monetary policy



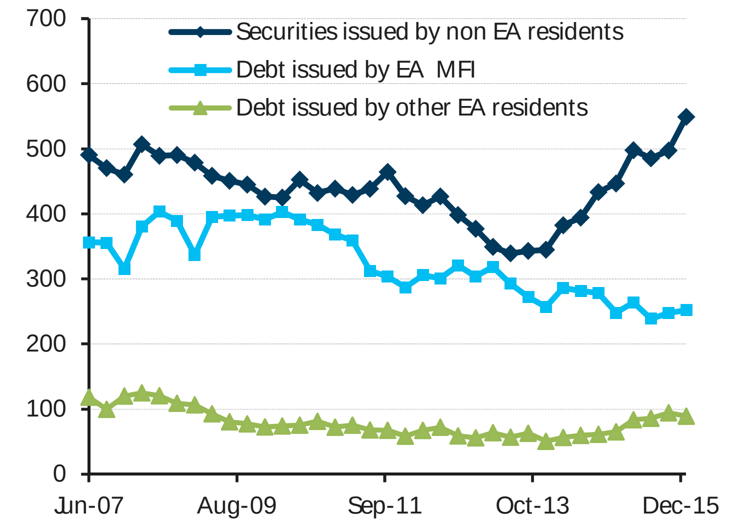
MMF shares held by non-residents have risen faster



MMF asset breakdown… non EA assets allocation has increased



MMF holdings of non EA resident issued securities has risen while those issued by MFI has fallen

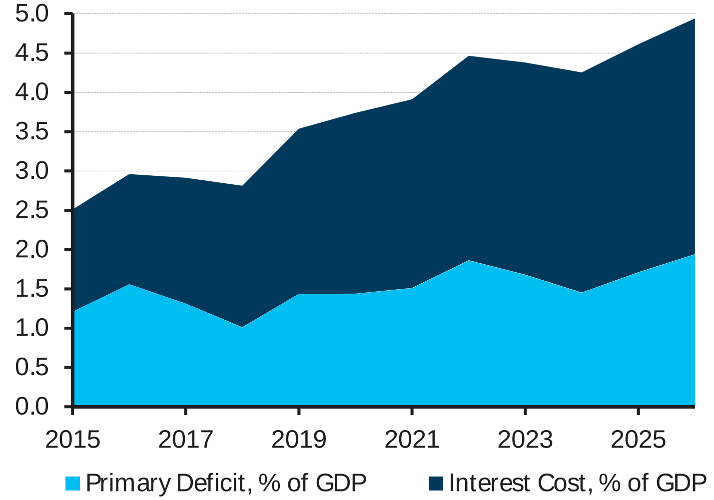


Source: Haver Analytics, Barclays Research

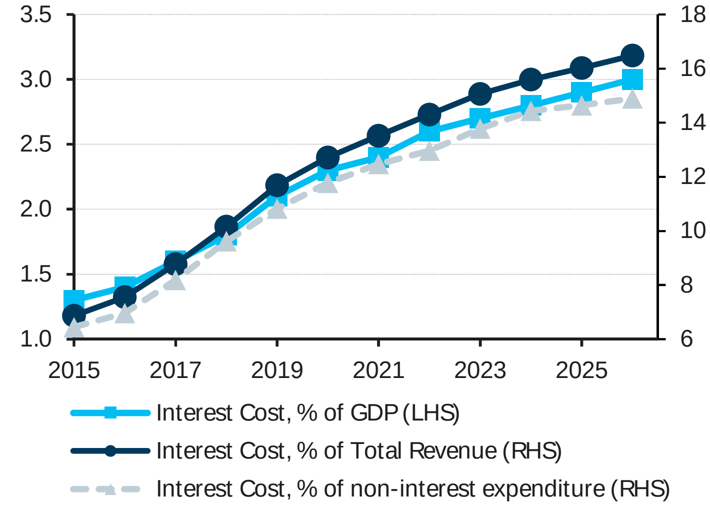
IV: Medium term challenges for the US Treasury

A rise in rates can put greater focus on interest costs

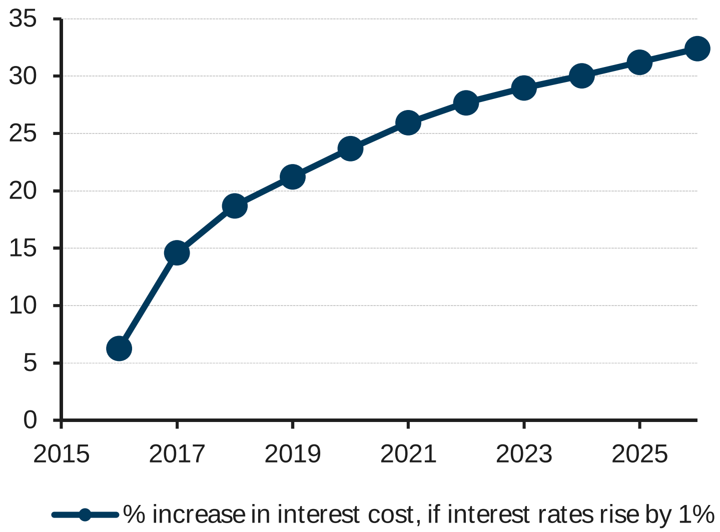
Interest costs expected to rise as share of total deficit



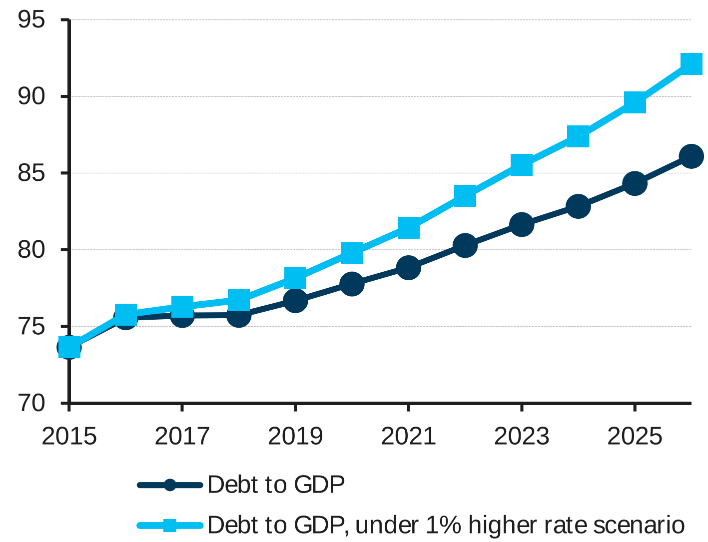
In basecase, interest costs to reach 3% of GDP (16% of revenue) in 10years



% increase in interest costs if rates rise by 1% per year



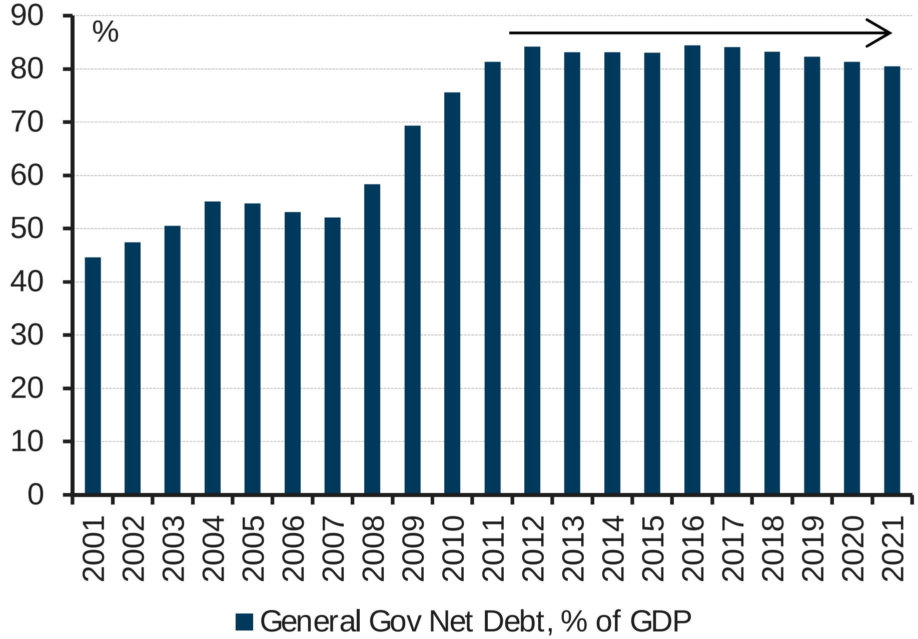
Debt to GDP increase in 1% interest rate rise scenario



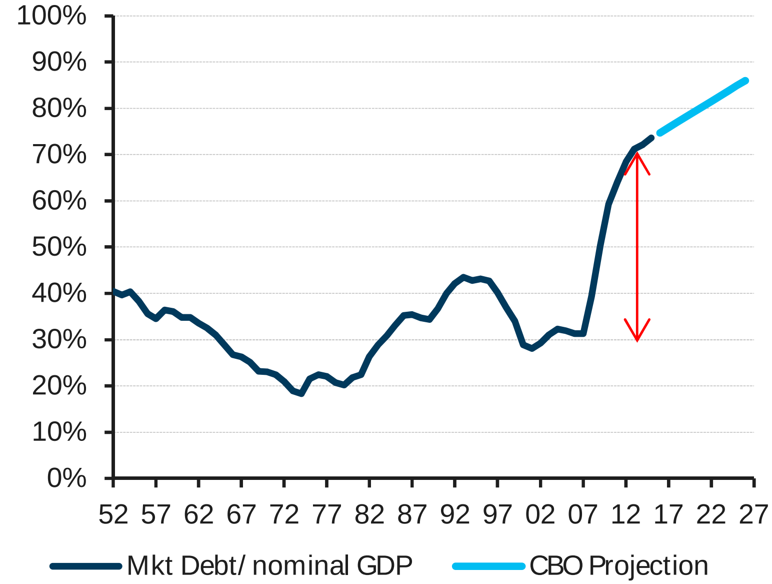
Source: CBO, Barclays Research

Flexibility to handle next economic downturn

Debt to GDP to remain elevated in G7 economies



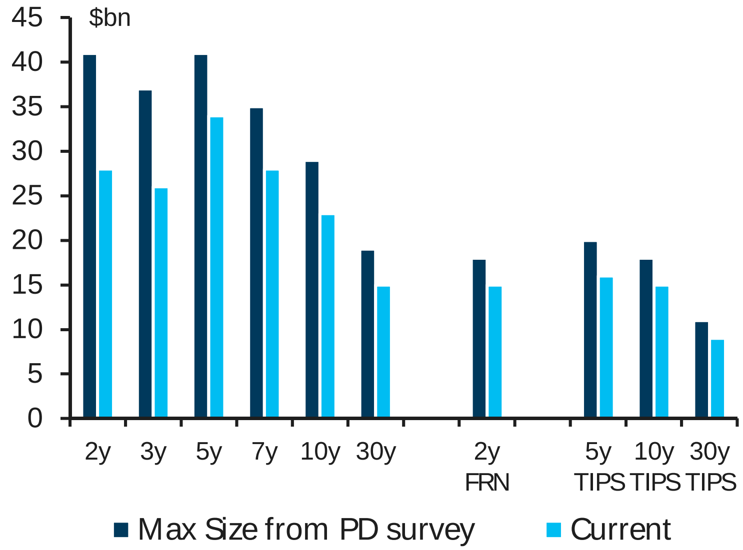
Debt to GDP ratio in the US is set to rise further



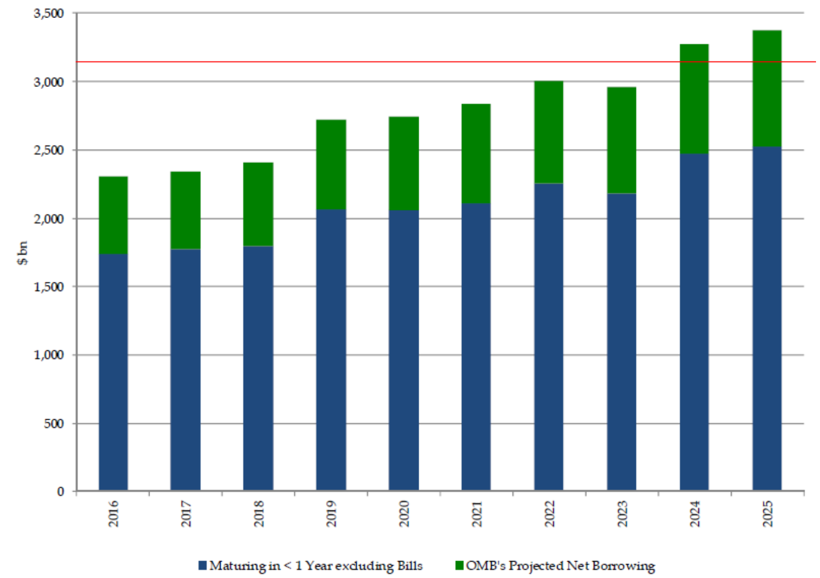
Source: IMF WEO, Haver Analytics, Barclays Research

Enough flexibility on issuance profile in the medium term

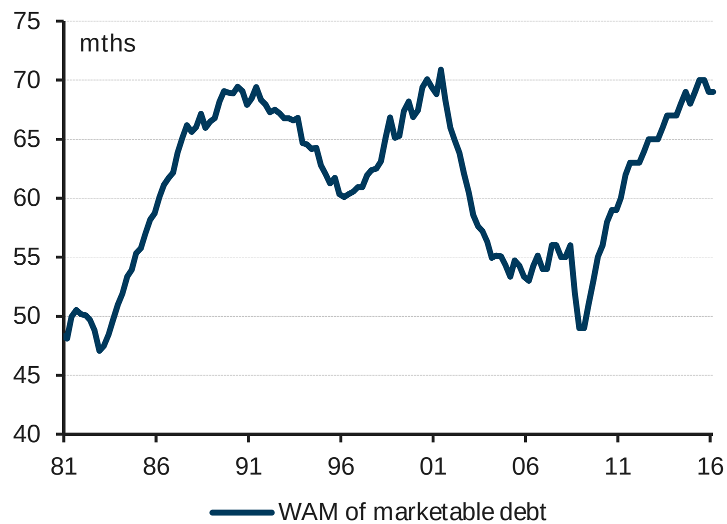
Current auction coupons vs max size estimate (from PD Survey)



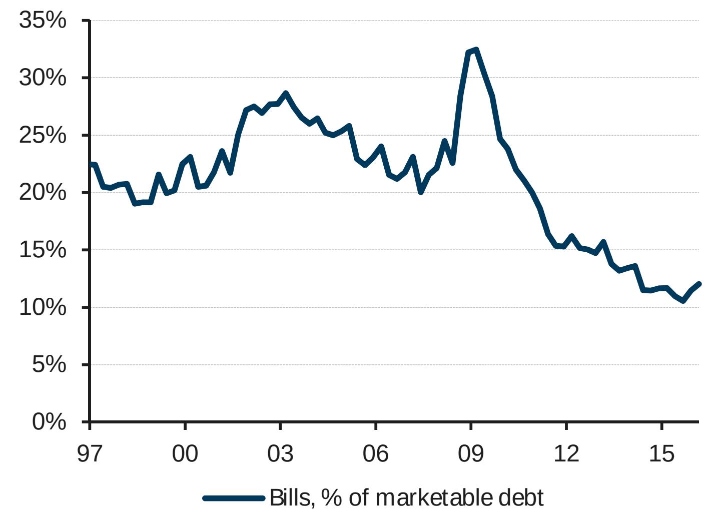
Treasury not likely to hit against max limit in the medium term



Multi-decade high WAM gives room for shortening if required



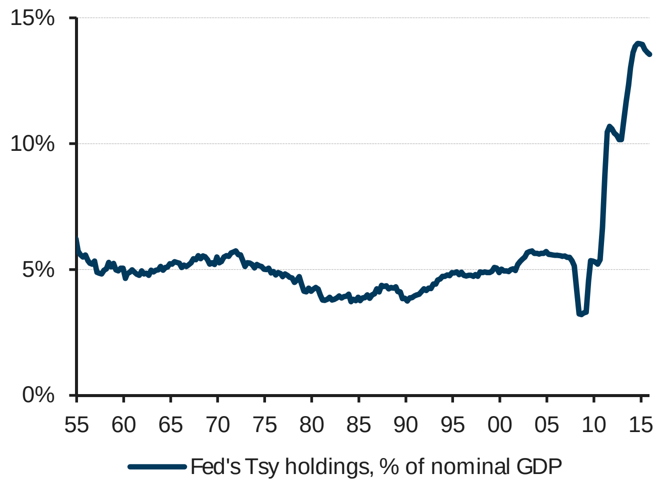
Bills, as share of outstanding, are near lows



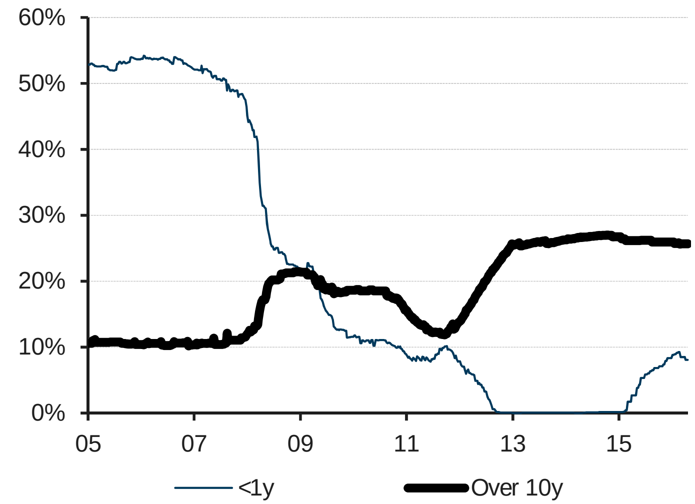
Source: US Treasury, NY Fed, Haver Analytics, Barclays Research

Potential unwind of QE is a medium term challenge

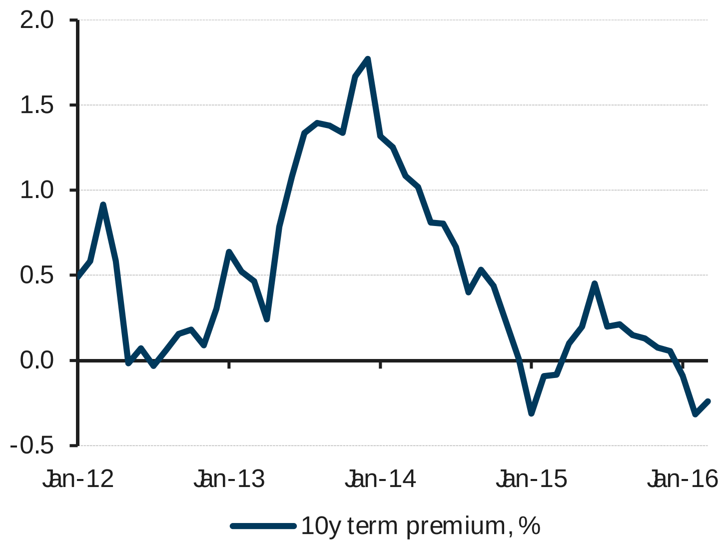
Fed holdings of Treasuries has risen…



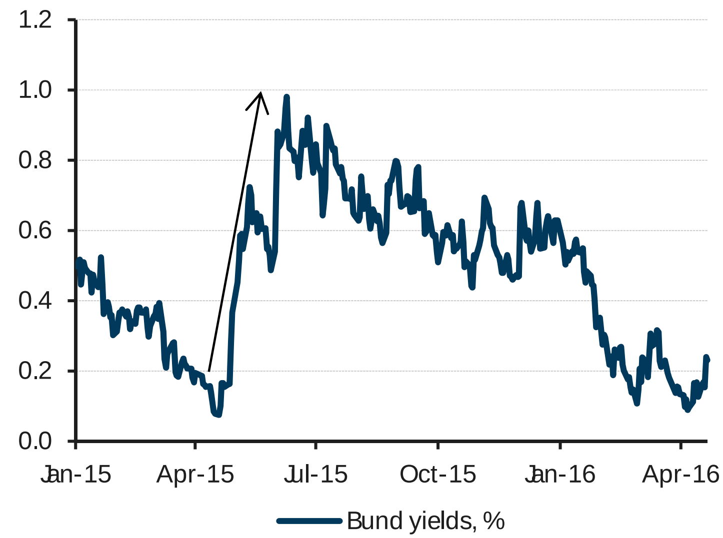
Longer tenor holdings at SOMA have risen



Term premia rose sharply during taper tantrum, and bunds yields rose sharply



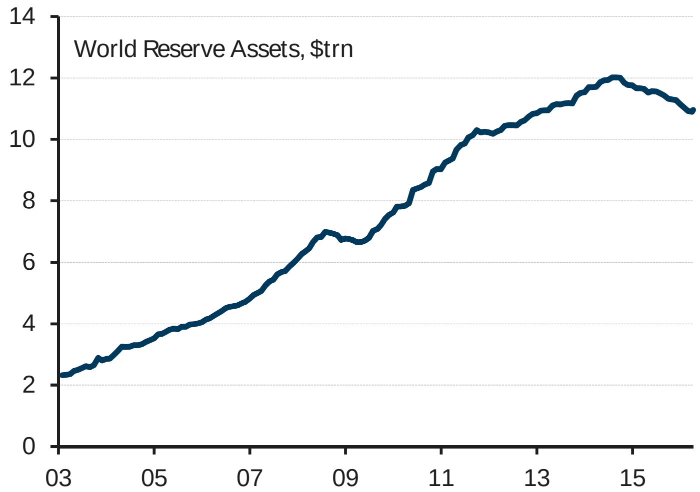
SOMA Maturity



Source: Haver Analytics, Barclays Research

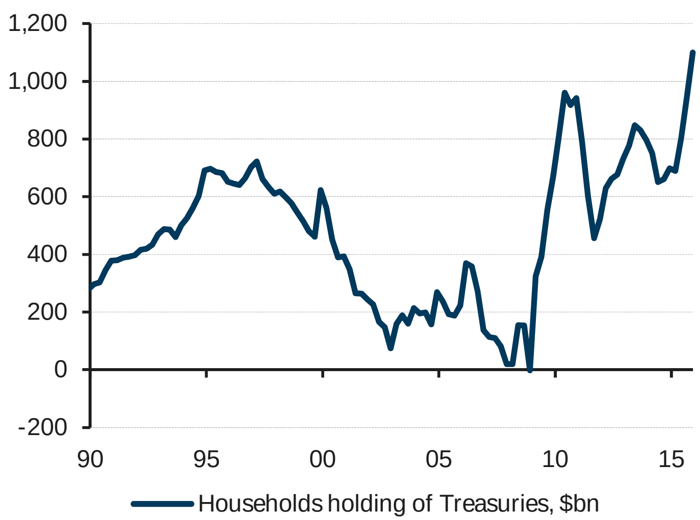
A decline in demand from price insensitive investors

World reserve assets have plateaued

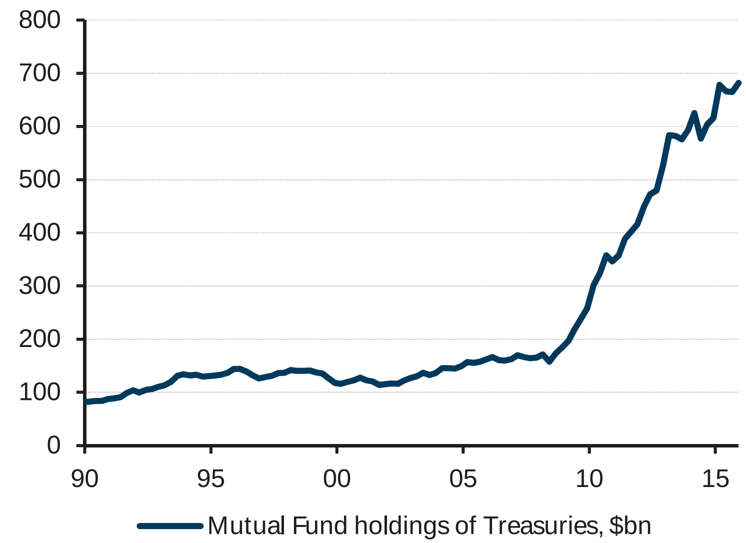


Regulatory demand from banks for Treasuries may have peaked

Household holdings of Treasuries has increased sharply…



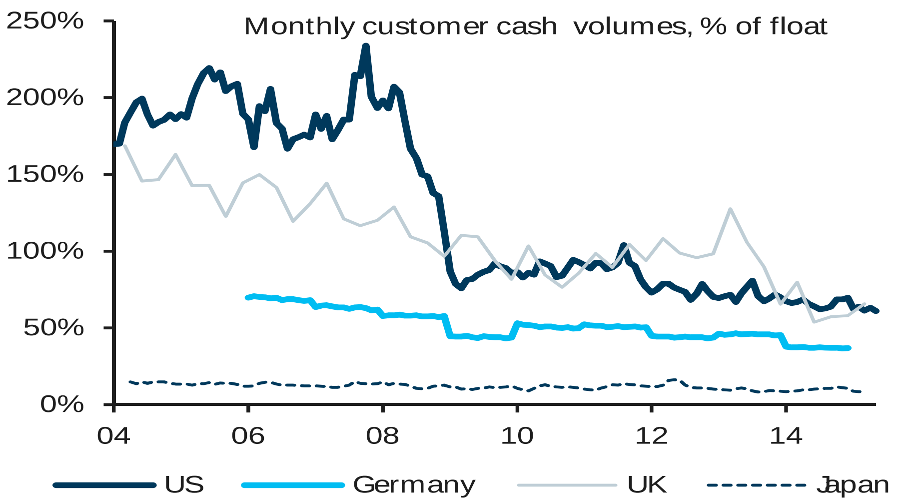
…as has holdings by mutual funds



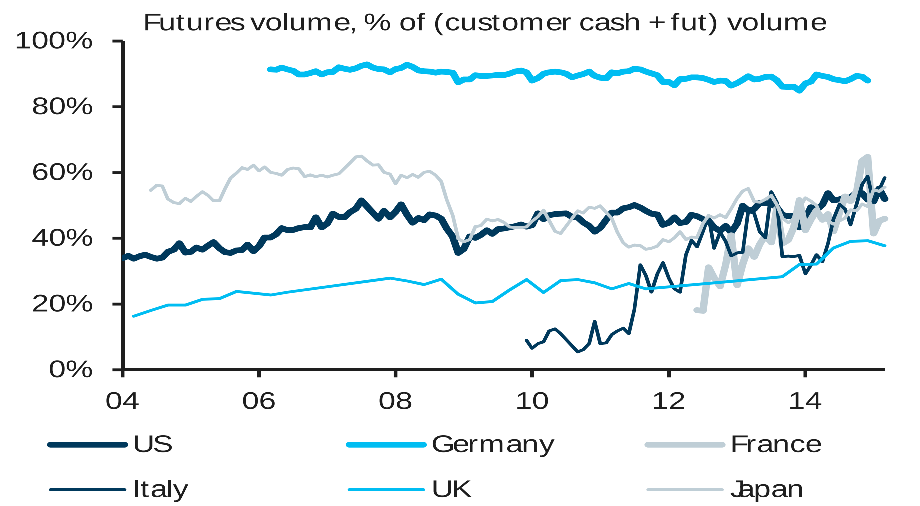
Source: IMF WEO, Haver Analytics, Barclays Research

Structural changes in market present a challenge

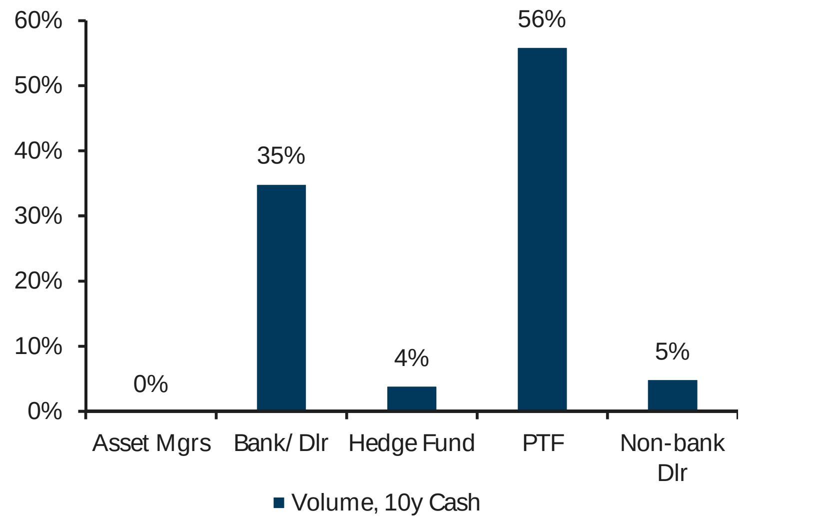
Turnover has declined in sovereign bond markets…



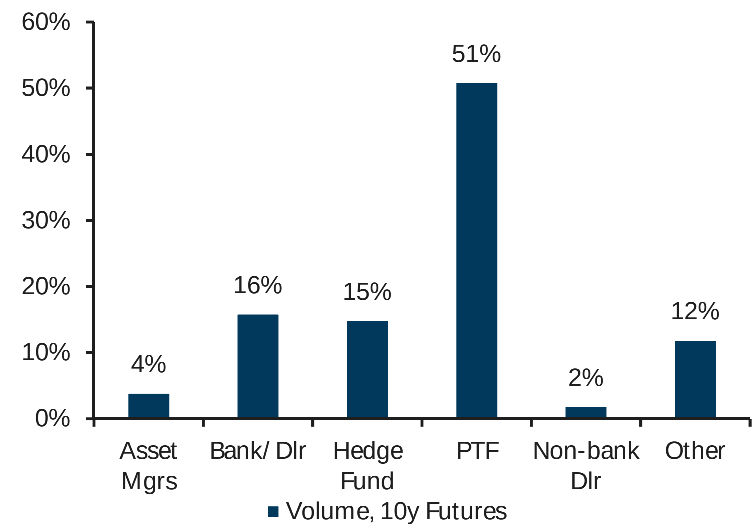
Futures command a higher share of volume



PTF are typically 56% of 10y volumes in cash space…



… and 51% in futures



PTFs trade more frequently, in smaller sizes and with lower fill ratios than bank-dealers

Source: US Treasury, Barclays Research